Kee High School

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Introduction

Our entry for the 2004-2005 High School Level Student Competition focuses on the changes that would take place in our neighborhoods and businesses. The introduction of PAV's into our world would bring about many changes to life as we know it. PAV's are an exciting new wave of transportation that we must examine as our country's travel demands continue to grow.

Choosing The Vehicle

After examining a nationwide travel study, we found that the average number of passengers for a 200 mile round trip is less than two people. We also found that over 50% of all person trips in the U.S. are taken by people in families whose household income is under $50,000.[1] These statistics, among others, convinced us that the most feasible PAV for use in the United States is the Mid-term Gridlock Commuter Aircraft.

The short takeoff and landing space makes it ideal for landing in small towns and ocean platforms. Since it can also fly at 150 mph, long commutes to work would be cut down to only one third their previous length. The cost of $50,000 is the most reasonable of the three choices for the bulk of American society: the middle and lower classes. The aircraft also boasts an impressive fuel efficiency of 40 miles per gallon, which would also be more appealing to families whose income is less than $50,000.[2] Another reason for choosing a less expensive vehicle is that in most cases, couples do not work in the same area. Owning two vehicles would be the only way for these people to use PAV's every day, so the vehicles would have to be affordable enough to own more than one. Although the Mid-term Gridlock Commuter Aircraft is fuel efficient and an affordable choice, it would not be practical for use as a family car.

[1] US Department of Transportation-Long Distance Leisure Travel in the United States (1995)
[2] NASA Langley Research Center

The Near-term Next Generation General Aviation Aircraft can seat as many passengers as two Mid-term Gridlock Commuter Aircrafts. Two Mid-term Gridlock Commuter Aircrafts would both get 40 miles per gallon which in reality equals out to be only 20 miles per gallon to transport four people. The Near-term Next Generation General Aviation Aircraft can transport four people with a fuel efficiency of 25 miles per gallon. This means that the Near-term Next Generation General Aviation Aircraft is 25% more fuel efficient than the Mid-term Gridlock Commuter Aircraft when four people are traveling together.

How Might Neighborhoods Change?

The most significant change in neighborhoods would be the size of cities. Large cities would be reduced in size to industrial complexes whose main purpose is to provide a place for businesses. Parking ramps would be redesigned to allow cars to fly in at each level. Since the cities would not have people living there, buildings would be built outward instead of upward. Small towns would spring up everywhere and people would live out in the country with plenty of open space. In addition, services which were formerly exclusive to large cities would be available to everyone, creating more jobs requiring skilled workers in every rural community in the country.

Large cities, which are now densely populated, would be downsized and exist solely for the purpose of industry. These cities would have their own power plants and would cater less to the needs of people who currently live there. They would become efficient work centers that could transport raw materials and products with ease, without the added complication of pedestrians, visitors, and traffic jams. The supply and demand chain would be strengthened with streets and highways in the air which would be open for the transportation of goods. Separate transportation networks would be made for commuting workers to ease the frustration of traveling for both the common public and product transporters alike.

There would be distinguished levels of transportation organized according to the weight, speed, and type of vehicle. Light commuter vehicles would fly on the highest level, while bulkier transport vehicles would fly on lower levels. Smaller cars would fly on top because in case of a vehicle malfunction, travelers on lower levels would be in less danger than if large transport vehicles were to fall from the same height.

Another change in neighborhoods would be an increased number of small towns. Since people would be able to travel longer distances to work in less time, there would be no need for large suburbs where houses are almost stacked on top of each other. Property ownership would be spread more evenly, as every family could own several acres of land on which they would be able to build a home with plenty of space. Condominiums would become obsolete and home ownership would be at an all time high because of the availability of property everywhere. The size of some small towns might increase, but the majority of people would live out in the country where their families would have plenty of room to live and grow without the distractions and confinements of big city life. Large cities produce more air pollution because of their traffic jams, and since so many people live in one area, the concentration of the pollution is huge. Small towns would spread out the pollution and reduce emissions because traffic is unrestricted by stoplights and there are never traffic jams in rural areas. Similar to the cars of today, PAV's would also need to be maintained, repaired, and fueled. Maintenance and repair would be performed by mechanics and fuel stations which would have to be set up across the country. All three would create new jobs and have a positive impact on our economy.

How would vehicles be maintained, repaired, and fueled and what types of new businesses would result?

The maintenance of PAV's would be performed by certified mechanics and technicians. Each town would need to have at least one service shop so PAV's would stay in proper running condition. Car

inspections would be a necessity since flying cars would have a higher potential for danger than today's cars. The checkups would make sure that the engine, propeller, signals, and other vital parts are in compliance with set PAV regulations. These inspections would be required by the state or federal government and be performed on a regular basis once per year. Without inspections, some people would be flying insecure homemade contraptions that could put lives in jeopardy.

PAV repair would also be performed by certified mechanics. Repair would take place in the same service shops as the maintenance and many new jobs would result. The new jobs would require training so the number of skill positions in the workforce would produce further benefits for the people and economy of our country. Advanced diagnostic systems could also be integrated into the car's electronic system, which would speed up the repair process and enable some individuals to perform repairs on their own time.

PAV's would be fueled using the same fueling stations as today's cars with a few modifications. Each town would need to have multiple fueling stations. Long range travel over oceans presents a dilemma, so large platforms would need to be built in the ocean. The structure would be similar to that of oil drilling platforms and be composed of large beams anchored to the ocean floor. The platform would be raised well above the normal surface of the water to avoid being covered by large waves. The stations would be placed along the way to major overseas destinations such as Europe, Asia, Australia, and some major islands. They would be spaced out evenly along the flight paths in accordance to the capable travel range. They would include at least one short runway and plenty of room for multiple PAV's on the platform at one time. The platforms would essentially be like a gas station on the water and would include food services and restroom facilities to make travel easier. The platforms would also provide a safe place to land during the trip if there was a problem with the car or one of the passengers. The platforms could also allow PAV's to land during storms or other adverse flying conditions.

PAV's would have an enormous effect on our nation's economy, bringing about new businesses, careers, and services. Service shops

would pop up across the country to accommodate the growing number of PAV's. Flight schools would always be at full capacity to train new flyers and provide extensive training for each student looking to gain their pilot license. Flying depends greatly on the weather, so weather stations would be created to give accurate local forecasts for air travel. Given that each small town would have a flight control tower, the government might outsource the colossal task to specialized companies whose sole purpose is to coordinate air traffic for the safety of everyone. There would be a complex computer network spanning from coast to coast that would integrate flight plans from every PAV and find the most efficient way to safely direct traffic. The computer system would incorporate weather forecasts and traffic congestion to guide either the PAV operator or the PAV itself on the correct route.

As with every good thing, there are always drawbacks. New modes of transportation must be found in order to ensure the safety of our people and our planet. PAV's show great potential, but before they are sold for widespread use, some problems must be addressed. In today's world, the main fear of PAV's is terrorism.

If every person had access to a flying car, almost any terrorist who could get into the country would have the chance to wreak havoc on our nation's major buildings and institutions. We could eliminate the threat by installing computer networks which would be wired into each car. The vehicle would be overridden once it traveled within a set distance from a major industrial complex or other important site. Computers would then proceed to escort the PAV to its intended destination. This system would ensure safety in our cities from the acts of terrorism or even faulty vehicles.

Since the cars would be flying at high altitudes, the possibility of fatalities from crashes would also increase. Each car would need to have an emergency system that would tell the passengers what is wrong. The cars would be equipped with parachutes and/or flotation devices for each passenger. Pilots would also need to be more educated than the average driver is today. People would be required to take refresher courses every four years so all passengers are safe. If

people demonstrate that they are too careless with PAV's, an autopilot program would need to be installed into the vehicles.

Even though PAV's could bring about new threats into our world, their benefits are well worth the risks. People must realize that no system is perfect, but we can all work together to bring about a new means of transportation that is safe, fast, and efficient.

With a changing world all around us, we as individuals would also have to change. We would use PAV's for longer trips to visit family members or on vacations. Our school's driver education program would also change to teach students how to operate a flying car. Since we live in a rural setting, PAV's would open up new opportunities that would otherwise be more difficult to acquire. They would influence our choice of college because the distance from home would be less of an issue. We would also be able to utilize consumer and informational resources which were formerly limited to people in urban areas.

Current Travel Methods and Congestion Problems

Currently, the total car passenger mileage in the U.S. is four times that of airline passenger mileage. However, over the past 45 years, airline passenger mileage has increased by 1500%, while car passenger mileage has only doubled.[3] These trends indicate that Americans are willing to turn to the air for their traveling needs. If PAV's are introduced, the air mileage would either equal the car mileage or even surpass it. Reduced car mileage would result in lowered congestion.

Our nation is growing quickly. By 2025, the population will be 26% larger.[3] More people means more traffic, and more traffic means more congestion. Congestion has increased so much that in the last 20 years, a 20 minute trip has turned into a 28 minute trip.[3] This unacceptable increase in commute time results in higher fuel usage and higher emission levels, further adding to the world's air pollution problems. The current traffic system is quickly becoming outdated and

[3] US Department of Transportation-Traffic Congestion and Reliability: Linking Solutions to Problems (2004)

must be revised. The leading cause of congestion today is that today's roadways simply cannot support the amount of traffic that is being forced through it each day. Another reason we need to rethink the situation is that the second leading cause of congestion is linked to accidents. If there was a PAV accident on one level, traffic could simply be rerouted to the remaining levels without causing too much congestion on any one level.

Conclusion

If PAV's were introduced into the world today, our way of life would change dramatically. Large cities would be made into well-organized industrial complexes that would only include services necessary for doing business. People would live in less congested areas because they would have the capability to quickly commute to their workplace. Many new businesses and jobs would result from the arrival of PAV's. The vehicles would create an entirely new industry which would strengthen the country's workforce and the economy as a whole. In order to make PAV's a reality, each person must cooperate to make changes for the greater good. Without everyone's help, flying cars may never make it off the ground.

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